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August 8, 2005

Mary L. Cottrell, Secretary
Department of Telecommunications and Energy
One South Station, 2nd Floor
Boston, MA 02110

RE: D.T.E. 04-116- Investigation by the Department of Telecommunications and Energy On Its Own Motion Regarding the Service Quality Guidelines Established in Service Quality Standards for Electric Distribution Companies and Local Gas Distribution Companies, D.T.E. 99-84 (2001)

Dear Secretary Cottrell:

Please find attached the responses of Boston Edison Company, Cambridge Electric Light Company, Commonwealth Electric Company, d/b/a NSTAR Electric and NSTAR Gas Company (together with NSTAR Electric, "NSTAR") to the following information requests asked by the Department of Telecommunications and Energy in the above-referenced proceeding:

- DTE-LDC-5-1
- DTE-LDC-3-3 (REVISED)

Please note that NSTAR's response to information request DTE-LDC-3-3 (REVISED) has been revised from its initial response only in the paragraph numbered (2) to include the table referenced in response to information request DTE-LDC-5-1.

Please contact me, Cheryl Kimball or Kerry Britland at NSTAR if you have any questions regarding the filing.

Very truly yours,

John K. Habib

Enclosure
cc: Service List
Jody Stiefel
Joseph Rogers, Assistant Attorney General

Information Request DTE-LDC 5-1

Please refer to the alternative formula below for the Problem Circuit Remediation Index ("PCRI").

(8760-Circuit SAIDI) / 8760

Comment on the advantages and disadvantages of employing this formula over the previous formula as expressed in Attachment A of DTE-LDC 4-1 through DTE -LDC 4-6.

Response

The above-referenced formula provides no particular advantage or disadvantage over the formula outlined in Attachment A of DTE-LDC-4-1 through DTE-LDC-4-6. Moreover, as discussed in response to Information Requests DTE-LDC-3-3, DTE-LDC-3-3 (Revised) and DTE-LDC-4-4, the concept of penalizing companies based on circuit-level SAIDI, SAIFI and CAIDI performance is infeasible and unreasonable as compared to the current system of establishing reliability penalties based on system-wide performance.

The following table demonstrates a significant flaw relating to the establishment of circuit-level SAIDI performance as a penalty measure, either with or without incorporating the proposed Problem Circuit Remediation Index. The table compares SAIDI on 2 hypothetical circuits, one serving 100 customers and one serving 1,000 customers:

HYPOTHETICAL 1:

Circuit A (serving 100 customers):

	Number of customers affected by outage	Duration of outage (in hours)	Customer hours of outage
Outage 1	10	1	10
Outage 2	50	1	50
totals	60		60

Circuit SAIDI = .60

HYPOTHETICAL 2:

Circuit B (serving 1,000 customers):

	Number of customers affected by outage	Duration of outage (in hours)	Customer hours of outage
Outage 1	100	1	100
Outage 2	200	1	200
Totals	300		300

Circuit SAIDI = .30

Based on circuit SAIDI information, Circuit A would be a worse performer than Circuit B, although only 60 customers were interrupted for Circuit A while 300 customers were affected on Circuit B for the same duration.

The proposed Problem Circuit Remediation Index (PCRI) calculation produces similarly flawed results. Applying the PCRI formula (8760 –Circuit SAIDI) / 8760) to each set of circuit SAIDI statistics produces the following results:

Circuit A = 0.99993
Circuit B = 0.99997

This calculation suggests that Circuit A is a poorer performer than Circuit B, which is not the case. Even if viewed as "comparable" performers, the formula is unworkable because the outage hours on Circuit B total 300 while the total for Circuit A total only 60, which is not a comparable result. Accordingly, in future SQ guidelines, the Department should not deviate conceptually from the current system of establishing reliability penalties based on system-wide performance.

Information Request DTE-LDC 3-3 (REVISED)

Please comment on the advantages and disadvantages of calculating SAIDI and SAIFI statistics and penalties based on the performance of individual feeder circuits rather than system averages.

Response

There are several reasons that calculating SAIDI and SAIFI on a circuit-level basis is inappropriate.

(1) *Reliability cannot be validly measured on a "micro" level because many factors contribute to the "reliability" of individual circuits.* The electric distribution system is engineered, constructed and operated on an integrated basis. Distribution circuits are just one subset of the assets that must be maintained and operated by the Company to provide reliable service to customers. Focusing exclusively on these sub-components of the overall system will not provide a valid basis for assessing service reliability because there are many factors that affect the performance of distribution circuits, many of which are outside the control of the Company. When measured at the system level, the standard-deviation mechanism is designed to account for normal variation in performance data to ensure that penalties are assessed when overall performance falls outside the deadband. Thus, on a system-level basis, there is a level of confidence that penalties will be assessed *only* when service reliability has degraded as a result of the utility's actions and management choices.

The same is not true when "reliability" is measured at the circuit level. On an individual circuit-level basis, it will be necessary to evaluate the characteristics of each circuit and to identify the various reasons for poor performance in order to ensure that the *reliability* of the circuit is being measured (and penalized) and not the impact of other factors on the circuit performance. For example, over the past two years weather patterns have produced severe winter storms in December and January in the Cape Cod service area, which had an affect on the reliability performance of many of the overhead circuits in the area (i.e. customers served by these circuits may have experienced one or more service outages). To the extent that the outage events associated with those storms fall short of the criteria for an "excludable major event," these outage events will be captured in the system-wide SAIDI/SAIFI performance data for those years and will factor into the overall reliability of the system. However, on an individual basis, *there is no*

reliability issue other than the fact the lines were affected by the severe weather during the performance year.

In addition, there are many times the Company cannot take steps to address outage drivers because of local requirements and other factors over which the Company has only limited influence. This occurs with overhead circuits and the policies in place in many communities regarding tree trimming. There are many instances where municipalities or individual homeowners will not allow the trimming or removal of trees that persistently affect the performance of a particular circuit. Alternatively, outages on underground distribution circuits take longer to repair because of the need for extensive coordination with the municipality to perform street openings and because of the need to de-energize customers to perform circuit cutovers (which is difficult to do in cold or hot weather periods). In terms of street openings, the Company must work around street-opening moratoriums in place from November through March of each year and prohibitions on street openings for a five-year period on newly paved streets. Given these limitations, the Company may not be able to access the line for some period of time to make necessary repairs. In these cases, it would be inappropriate to penalize the Company for "reliability" infractions when it is working diligently to repair the situation but is stymied by municipal requirements. Because the characteristics and outage drivers of each circuit would need to be examined in evaluating circuit reliability, it is inappropriate to apply an SQ measure that is valid only when performance data can be objectively measured and quantified.

SAIDI/SAIFI at a system level are metrics that are used across the electric utility industry to assess overall reliability and restoration-response levels. A significant advantage of using a system-level metric is that it can be trended in a consistent way over time to show the relative improvement or degradation across the population of circuits. Therefore, measurement of SAIDI/SAIFI statistics on a system-wide basis is appropriate.

(2) *Reliability statistics are function of the number of customers connected and other characteristics of the individual circuit.* A deficiency in measuring SAIDI/SAIFI at the circuit level is that the performance of an individual circuit may appear to be poor because of the relatively small number of customers that it serves. The number of customers per circuit is widely variable. A circuit with fewer customers would appear to be less reliable than a circuit serving a greater number of customers, even if, in reality, the circuit with fewer customers is operating on a more reliable basis. For example, assume that two circuits, one

serving 100 customers and one serving 1,000 customers, each had outages of 2 hours in duration over year. The following table represents SAIDI and SAIFI calculations for each circuit:

Circuit A (serving 100 customers):

	Number of customers affected by outage	Duration of outage (in hours)	Customer hours of outage
Outage 1	10	1	10
Outage 2	50	1	50
totals	60		60

Circuit SAIDI = .60
Circuit SAIFI = .60

Circuit B (serving 1,000 customers):

	Number of customers affected by outage	Duration of outage (in hours)	Customer hours of outage
Outage 1	100	1	100
Outage 2	200	1	200
Totals	300		300

Circuit SAIDI = .30
Circuit SAIFI = .30

Based just on circuit SAIDI and SAIFI information, Circuit A would be a worse performer than Circuit B, although only 60 customers were interrupted for Circuit A while 300 customers were affected on Circuit B for the same duration.

In relation to each other, the circuit serving the fewer number of customers appears to be less reliable; however, in reality, both experienced outages of the same duration. In fact, there is substantial variation in the characteristics of distribution circuits used to serve customers on the Company's system, which would preclude a determination as to the relative reliability of a given circuit based on SAIDI/SAIFI statistics. These characteristics include the length of the distribution circuit, the number of customers served, whether the circuit is underground or overhead, whether the circuit is exposed to environmental factors

that affect performance and whether there are factors that impede the Company's ability to perform needed repairs and maintenance. Therefore, using circuit-based SAIDI or SAIFI statistics to determine SQ penalties would produce flawed results.

(3) *The system is constantly reconfigured in the course of maintaining and upgrading the distribution system often making it impossible to track circuit performance on a consistent basis over time.* As customer load requirements on the distribution system grow and change, the Company performs upgrades and reinforcements to the system that frequently involve reconfigurations of existing circuits. Circuits may be extended, shortened, converted and/or splits over time to reduce or prevent overloading or to fit in with improvements in engineering practices. When a new circuit is added, two or three other circuits may be reconfigured to serve different customer load. An expansion of a substation can require the reconfiguration of five or six circuits and the addition of a new substation can involve the reconfiguration of as many as 40 distribution circuits. Therefore, unlike with system-wide SAIDI and SAIFI, the Company would not be able to consistently analyze reliability trends by circuit over time, and therefore, a circuit-level SAIDI or SAIFI figure would not be appropriate as an indicator of service reliability.

(4) *Penalizing performance on a circuit-level basis will establish misguided signals regarding system investment.* The Company has an obligation to maintain reliable service to customers in the most cost-effective and efficient manner possible. To fulfill this obligation, the Company plans its distribution investments on a system-wide basis, based on all available data regarding the performance of a variety of components within the distribution system as well as customer usage patterns and forecasted load growth. Penalizing utilities for individual circuit performance will send the signal that individual distribution circuits should be upgraded at the expense of other projects that may have a greater impact on the overall level of service to customers in the long run. The Company uses a comprehensive process for identifying, planning and prioritizing system upgrades (see, response to Information Request DTE-LDC-4-1). Using this process the Company has achieved a 39 percent reduction in the frequency of outages and a 34 percent reduction in the duration of outages since 2001. During this time period the Company also completed numerous projects targeted at improving performance on a circuit-level, as well as addressing "pockets of poor performance" that emerged over that time period. Circuit-level SAIDI/SAIFI data will serve only to provide a distorted and inaccurate view of a company's investment in service reliability and will inappropriately divert

resources to a sub-component of the system to the detriment of the overall customer base.